

AMENDMENTS TO THE CLAIMS

Please amend the claims as they currently stand so that they are in accord with the following listing of the claims:

Claim 1 (currently amended): A multi-polarized antenna for transmitting and/or receiving radio frequency (RF) signals, said antenna comprising:

at least two radiative antenna elements each having a first end and a second end, and wherein said second ends of said radiative antenna elements are electrically connected at an apex point and are each disposed outwardly away from said apex point at an acute angle relative to and on a first side of an imaginary plane intersecting said apex point; and

an electrically conductive ground plane located in the same plane as ~~at and/or to a second side of said imaginary plane.~~ said imaginary plane or located spaced away from said imaginary plane on a second side of said imaginary plane.

Claim 2 (original): The antenna of claim 1 further comprising a dielectric material serving to mechanically connect, at least in part, said radiative antenna elements to said ground plane while electrically insulating said radiative antenna elements from said ground plane.

Claim 3 (original): The antenna of claim 2 further comprising an electrical conductor electrically connected to said radiative antenna elements at said apex point and extending away from said apex point toward a ground plane side of said antenna through said dielectric material to allow connection to a transmission line for interfacing said radiative antenna elements to a radio frequency transmitter and/or receiver.

Claim 4 (original): The antenna of claim 1 further comprising an electrical connector to allow connection of said radiative antenna elements and said ground plane to a transmission line.

Claim 5 (original): The antenna of claim 1 wherein said ground plane comprises a circular conductive ground plane having a radius of at least $\frac{1}{4}$ wavelength of a tuned radio frequency.

Claim 6 (original): The antenna of claim 1 wherein said ground plane comprises a rectangular conductive ground plane having a length and width of at least $\frac{1}{4}$ wavelength of a tuned radio frequency.

Claim 7 (original): The antenna of claim 1 wherein said ground plane comprises a triangular conductive ground plane having minimum distances from the center of the triangular conductive ground plane to the sides of the triangular conductive ground plane of at least $\frac{1}{4}$ wavelength of a tuned radio frequency.

Claim 8 (original): The antenna of claim 1 wherein said ground plane comprises a plurality of conductive linear rods each having a length of at least $\frac{1}{4}$ wavelength of a tuned radio frequency.

Claim 9 (original): The antenna of claim 1 wherein each of said radiative antenna elements are substantially linear and have a physical length determined by a pre-defined radio frequency.

Claim 10 (original): The antenna of claim 1 wherein said acute angle between each of said radiative antenna elements and said ground reference is between 1 degree and 89 degrees.

Claim 11 (original): The antenna of claim 1 further comprising a mounting mechanism to allow mounting of said antenna to another device or structure.

Claim 12 (original): The antenna of claim 1 wherein said radiative antenna elements are equally spaced in angle circumferentially around 360 degrees.

Claim 13 (currently amended): A method to construct a multi-polarized antenna for transmitting and/or receiving radio frequency (RF) signals, said method comprising:

generating at least two radiative antenna elements each having a first end and a second end and each being tuned to a predetermined radio frequency;

electrically connecting said second ends of said radiative antenna elements at an apex point such that each radiative antenna element is disposed outwardly away from said apex point at an acute angle relative to and on a first side of an imaginary plane intersecting said apex point; and

positioning an electrically conductive ground plane at ~~and/or to a second side of said imaginary plane.~~ in the same plane as said imaginary plane or spaced away from said imaginary plane on a second side of said imaginary plane.

Claim 14 (original): The method of claim 13 further comprising mechanically connecting said radiative antenna elements to said ground plane using at least a dielectric material to electrically insulate said radiative antenna elements from said ground plane.

Claim 15 (original): The method of claim 14 further comprising connecting an electrical conductor to said radiative antenna elements at said apex point such that said electrical conductor extends away from said apex point toward a ground plane side of said antenna and through said dielectric material to allow connection to a transmission line for interfacing said radiative antenna elements to a radio frequency transmitter and/or receiver.

Claim 16 (original): The method of claim 13 further comprising connecting an electrical connector to said radiative antenna elements and said ground plane to allow connection of said antenna to a transmission line.

Claim 17 (original): The method of claim 13 wherein said ground plane comprises a circular conductive ground plane having a radius of at least $\frac{1}{4}$ wavelength of a tuned radio frequency.

Claim 18 (original): The method of claim 13 wherein generating each of said at least two radiative antenna elements comprises cutting a substantially linear conductive material to a predetermined physical length.

Claim 19 (original): The method of claim 13 wherein said predetermined radio frequency for each of said radiative antenna elements is substantially the same for each of said radiative antenna elements.

Claim 20 (original): The method of claim 13 wherein said predetermined radio frequency for each of said radiative antenna elements is substantially different for each of said radiative antenna elements.

Claim 21 (original): The method of claim 13 wherein an angle between each of said radiative antenna elements and said ground reference is between 1 degree and 89 degrees.

Claim 22 (original): The method of claim 13 further comprising connecting a mounting mechanism to said antenna to allow mounting of said antenna to another device or structure.

Claim 23 (original): The method of claim 13 wherein said radiative antenna elements are equally spaced in angle circumferentially around 360 degrees.

Claim 24 (currently amended): A multi-polarized antenna for transmitting and/or receiving radio frequency (RF) signals, said antenna comprising:

at least two radiative antenna elements each having a first end and a second end, and wherein said second ends of said radiative antenna elements are electrically connected at an apex point and are each disposed outwardly away from said apex point at an acute angle relative to and on a first side of an imaginary plane intersecting said apex point;

an electrically conductive ground plane located in the same plane as at and/or to a second side of said imaginary plane said imaginary plane or located spaced away from said imaginary plane on a second side of said imaginary plane; and

a parasitic conductive reflector positioned to said first side of said imaginary plane and away from said at least two radiative antenna elements.

Claim 25 (original): The antenna of claim 24 wherein said parasitic conductive reflector is substantially conically shaped.

Claim 26 (original): The antenna of claim 24 wherein said parasitic conductive reflector comprises a flat plane.

Claim 27 (currently amended): A stacked configuration of antennas for improving gain along a particular spatial dimension, said stacked configuration comprising at least two antennas co-linearly positioned in spatial proximity to each other along an imaginary line and having substantially the same spatial orientation, and said antennas each comprising at least two radiative antenna elements each having a first end and a second end, and wherein said second ends of said radiative antenna elements are electrically connected at an apex point and are each disposed outwardly away from said apex point at an acute angle relative to and on a first side of an imaginary plane intersecting said apex point, and an electrically conductive ground reference located in the same plane as at and/or to a second side of said imaginary plane or located spaced away from said imaginary plane on a second side of said imaginary plane.

Claim 28 (original): The stacked configuration of claim 27 wherein each antenna of said at least two antennas further comprises a parasitic conductive reflector positioned to said first side of said imaginary plane and away from said at least two radiative antenna elements.

Claim 29 (original): The stacked configuration of claim 27 wherein a spatial separation distance between any two adjacent antennas of said at least two antennas is between $\frac{2}{3}$ of a wavelength and 3 wavelengths of a predetermined radio frequency carrier signal. More or less spacing is not as effective in gain but is effective in spatial diversity.

Claim 30 (original): The stacked configuration of claim 27 wherein said ground reference comprises a ground plane.

Claim 31 (original): The method of claim 13 further comprising mechanically connecting a motor to said multi-polarized antenna to allow rotation of said multi-polarized antenna about a defined axis of said antenna.

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